

Eleven Warrants from the Manual On Uniform Traffic Control Devices

These 11 warrants define minimum conditions under which signal installations may be justified. The Manual suggests that traffic control signals should not be installed unless one or more of the signal warrants are met. However, the satisfaction of a warrant or warrants is not in itself justification for a signal. Every situation is unique and warrant guidelines must be supplemented by the effects of specific site conditions and the application of good engineering judgment. Installation of a traffic signal should improve the overall safety and/or operation of an intersection and should be considered only when deemed necessary by careful traffic analysis and after less restrictive solutions have been attempted.

Warrant 1 - Minimum vehicular volume

Traffic volumes on intersecting streets exceed specified values for any 8 hours on an average day.

Warrant 2 - Interruption of continuous traffic

The traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard in entering or crossing the major street. Specified values are exceeded for any 8 hours on an average day.

Warrant 3 - Minimum pedestrian volume

The vehicular volumes on a major street and the pedestrian volumes crossing that street exceed specified values for any 8 hours on an average day.

Warrant 4 - School crossing

Inadequate gaps exist in traffic for schoolchildren to cross at established school crossings.

Warrant 5 - Progressive movement

Signalization is necessary to maintain proper grouping or platooning of vehicles and effectively regulate group speed.

Warrant 6 - Accident experience

The number of reported accidents potentially preventable by a signal exceeds a specified value. Additionally, volume requirements of warrants 1, 2 or 3 are 80% satisfied and less restrictive solutions have been attempted.

Warrant 7 - Systems

This warrant encourages concentration and organization of traffic flow networks.

Warrant 8 - Combination of warrants

No single warrant is satisfied, but warrants 1 and 2 are satisfied to the extent of 80% or more.

Warrant 9 - Four Hour Volumes

In each of any four hours of an average day the hourly volumes on the major street and the minor street exceed specified values.

Warrant 10 - Peak Hour Delay

For one hour of an average day the minor street traffic suffers undue delay in entering or crossing the major street.

Warrant 11 - Peak Hour Volume

The peak hourly volumes on the major street and the minor street exceed specified values for any one hour of an average day.

Listed below are general characteristics of traffic signals:

- Traffic control signals that are properly located, operated and maintained may have one or more of the following advantages
- Signals may provide for the orderly movement of traffic by assigning right-of-way to conflicting movements of traffic.
- Signals may increase the traffic-handling capacity of an intersection by permitting conflicting streams of traffic to share the same intersection.
- Signals may reduce the frequency of certain types of accidents, especially right-angle (broadside) collisions.
- Signals may provide for continuous movement and progression of traffic through coordination with surrounding traffic signals.
- Signals may interrupt heavy traffic to allow both vehicular and pedestrian traffic to cross.
- Traffic control signals may have one or more of the following disadvantages
- Signals may increase delay - both overall intersection delay and/or specific movement delay.
- Signals may encourage the use of alternate and/or less adequate routes by drivers wishing to avoid the signal.
- Signals may encourage increased volumes of traffic on the minor street by drivers wishing to use the signal.
- Signals may encourage disobedience and disregard of traffic control devices. (During periods of lesser volume on the main street, drivers on the minor street may have sufficient gaps to cross and/or enter traffic, but be prohibited from doing so by the signal.)
- Signals may cause an increase in the frequency of certain types of accidents, especially rear-end collisions.